

Estimating the Demand for Water in the West Bank

ABSTRACT

The main objective of this study is to estimate the demand for water in the West Bank, estimation of this function shows the effects of price and household income on water consumption. Domestic water demand changes over place and time, demand function depends on many variables, some are Physical, social, economic, technological and religious variables. This study provides information about the relevance of these variables and how they affect the domestic water consumption. The type of locality is also considered along the lines in the literature. The estimated model can be used for predicting future water demand.

Multiple regression techniques (ordinary least squares) were used to estimate the model. The model was estimated in various forms using observations on 500 single family households from the west bank and east Jerusalem over the period 1999-2000.

The results of the study indicate that, price, income, family size, air conditioner ownership, connection with general services and ownership of animals are all significant in explaining water demand.

Average daily water consumption is 82.8 liters per person. Total consumption increases with the following variables, family size, air

conditioner ownership, income, and connection with water network public services, while price and animal ownership have a negative effect.

Demand for water is inelastic, price elasticity of demand equals -0.1499, while income elasticity 0.1826 in the area of the study as whole. Price elasticity of demand is -0.22 for urban areas and -0.497 for rural and camp areas. The income elasticity of demand is 0.198 for urban and 0.158 for rural and camp areas. Price elasticity of demand is more inelastic in urban areas than rural and camp areas.

There is appositive relation between price and average cost, also between price and tariff. The price per cubic meter is different from one water utility to another. It ranges from "1 New Israeli Shekel to 9 New Israeli Shekel per cubic meter". The average for the area as a whole is 3.74 New Israeli Shekel/m³. The results also show the following indicators:

- Average income for each family is 3971 NIS.
- Average area for each single house is 136.77 m².
- Average household size 6.87 individuals.

An increase in water loss ratio has a direct effect on increasing the cost and water imports to satisfy the demand for water in the West Bank.

This study recommends the adoption of increasing block rate pricing policy for water management strategy rather than raising flat price as tool of demand management policy.

Management restructuring is another recommendation of the study because of the high water loss ratio, ineffective revenue collection, corruption and favored customers. The Palestinian water authority must work to increase the quantity supplied for each person in the study area.